Perforated Peptic Ulcer Disease: Factors Predicting The Mortality And Morbidity In A Tertiary Care Centre In Southern India.

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Citation

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Abstract

Background: Perforation is the most common complication of peptic ulcer disease. In spite of modern progress in the management, it is still a life-threatening catastrophe. Perforation may occur in a patient with previous history of ulcer disease or it may happen without any prior symptoms.Methods: This study comprises a retrospective analysis of all patients diagnosed of perforated peptic ulcer disease at SNMC AND HSK HOSPITAL, Bagalkot, INDIA, during the years 2006 to 2011. Clinical data were recorded and analyzed.Results: Out of 180 patients, 136 were males and 44 were females. The age of the patients varied from 18 to 86 years. Gastric perforation was seen in only 17 patients out of 180 and the rest of the patients had duodenal perforation. All the patients underwent surgical treatment of simple closure with omental patch and peritoneal lavage. Postoperative complications occurred in 47 [26.1%] patients and there were 24 deaths [13.3%].Conclusion: We conclude that morbidity and mortality are associated with age of the patients, haemodynamic instability, operative delay, site of the ulcer, peritoneal contamination and quality of postoperative care.

INTRODUCTION

Perforated peptic ulcer is the most serious complication of ulcer disease. After Mikulicz first sutured a perforated duodenal ulcer in 1887, Hansen achieved the first successful operation. The sudden release of gastric or duodenal content into the peritoneal cavity through a perforation can lead to a sequence of events which, if not properly managed, is likely to cause death. In spite of development in both diagnosis and treatment of peptic ulcer disease, the incidence of perforation seems to be unchanged and even increased in some reports in older age groups [1].

Mortality is influenced by patient's age and sex, site of the ulcer, treatment delay, concurrent disease, preoperative shock and type of anesthesia used [2, 3]. A majority of factors are interrelated, for instance, treatment delay seems to increase the mortality. A long delay in pretreatment is more common in elderly patients, and there is also a relationship between age and mortality [3].

Despite lots of evidence in the literature, the knowledge about factors affecting the mortality that occurs after perforated peptic ulcer is limited. We have retrospectively studied 180 patients treated for perforated peptic ulcer from 2006 to 2011. The purpose of the present study is to evaluate the factors that may influence the mortality and morbidity in operated cases of perforated peptic ulcer disease.

MATERIALS AND METHODS

This study comprises a retrospective analysis of all patients diagnosed with perforated peptic ulcer disease at SNMC AND HSK HOSPITAL from 2006 to 2011. Patients with perforated malignant ulcer, traumatic perforation and gastrinoma were excluded from the study.

The following data were collected from hospital records: age, sex, previous history of ulcer disease; use of tobacco, alcohol, corticosteroid and NSAIDs; duration of symptoms suggestive of perforation; location, size of perforation and amount of peritoneal contamination. Treatment outcome was elaborated by postoperative complications, hospital stay and death.

The size of ulcer was noted in diameter in millimeter. Haemodynamic instability at the time of presentation was defined as a systolic blood pressure less than 90 mmHg. A

delay in treatment was defined as an interval of more than 24 hours until surgery from the suspected time of perforation and patients were arbitrarily divided into two groups(<49 years and >49years). All the data were analyzed using Chi square and multivariate analysis with a probability value of <0.05 as a statistically significant value.

RESULTS

In this study, 24 patients died out of 180 perforated peptic ulcer patients, which accounts for a death rate of 13%. The age of patients varied from 18 to 86 years. Fifty-four patients were below the age of 49 years and had mortality of 3; 126 patients who were above the age of 49 years had a mortality of 21. Male-to-female ratio was 10:3. Preoperative haemodynamic instability was seen in 28 patients and among them 5 patients died postoperatively. Only 72 out of 180 patients were operated within 24 hours of onset of symptoms but the majority of patients reached the hospital after more than 24 hours. High mortality [19 patients] was seen among the patients who were operated more than 24 hours of onset of symptoms. Simple closure of perforation with omental patch and peritoneal lavage was done in all patients except in 3 patients who were managed conservatively due to haemodynamic instability. Peritoneal contamination was graded from 0 to 4; mean peritoneal contamination was 2.01 and mortality was higher in contaminated cases [table 1].

Figure 1

TABLE 1: PATIENT DEMOGRAPHY

Serial no.	Particulars of patients	Total no. of patients	Mortality	P-value
1.	<49 years >49 years	54 126	03 21	0.045
2.	Male Female	136 44	19 05	0.659
3.	Duodenal perforation Gastric perforation	163 17	20 04	0.194
4.	<24 hrs delay >24 hrs delay	72 108	05 19	0.040
5	Preoperative hypotension	25	05	0.09
6	Peritoneal contamination Grade 1 Grade 2 Grade 3 Grade 4	 86 63 23 08	 07 09 06 02	0.101

DISCUSSION

Perforated peptic ulcer is a serious complication of peptic ulcer disease with potential risk of grave complications. Complication rates continued to remain the same despite overall reduction in incidence of peptic ulcer disease in recent decades [4, 5]. Mortality is higher in older patients [1, 6, 7]. Boeys and Wong found that age itself has no effect on patient's outcome, but they did find concurrent medical illness to have a significant detrimental effect. This indicates that higher mortality in old age might be due to associated medical illness. In our series, concurrent medical illness had a three times higher incidence in patients over 49 years [P<0.045]. The two-by-two table analysis showed no significant sex-related mortality [P<0.65].

The duodenum is the most common site of ulcer perforation [8, 9]. Our study also showed the duodenum as predominant site [90.5%]. Gastric ulcer perforation was associated with higher mortality [23%] and morbidity than the duodenal ulcer perforation. This is in accordance with earlier published studies [5,10,11,12]. Most of these patients were associated with older patient age, greater size of ulcer perforation, and extensive intra-abdominal contamination. It is also known that the size of perforation is more likely associated with higher mortality and morbidity due to increased peritoneal contamination [13]. There is no clear cut definition for size of ulcer perforation even though the size less than 2.5cm carries good prognosis by simple closure with omental patch [14]. In our study, we have not come across giant perforation.

Treatment delay is a major prognostic factor for poor outcome of perforated peptic ulcer disease [13, 15, 16]. Mortality and morbidity drastically increases with operative delay of more than 24 hours [15]. Most of our patients were referred from peripheral hospitals of long distance, this itself delayed the treatment. Haemodynamic instability and extensive peritoneal soiling was seen in delayed cases, which contributed to higher mortality [17.5%]. Haemodynamic instability was mainly evident among the delayed cases and may be due to sepsis. Pre-operative hypotension was noted in 13% of cases admitted to hospital, and had high mortality [20%]. Co-morbidity alone cannot explain the increase in the mortality [table 2] but other factors like diagnostic difficulties, treatment difference, as well as the ongoing functional and biological deterioration associated with advanced age may play a role [17, 18].

Figure 2

TABLE 2: CO-EXISTING MEDICAL ILLNESS WITH PEPTIC ULCER PERFORATION

Serial no.	Co-existing disease	51 patients [28.34%]
01	Respiratory	15
02	Cardiovascular	13
03	Diabetes mellitus	08
04	Anaemia	07
05	Renal	03
06	Hepatic	01
07	CNS	01
08	Rheumatoid arthritis	03

A previous study by Boey et al. showed that patients with risk factors 0, 1, 2, and all 3 have mortality rates of 0%, 10%, 45.5% and 100%, respectively [19]. A similar observation was made in our study. Although the Boey scoring system accurately predicts the chance of survival, it failed to estimate morbidity. APACHE II scoring system is routinely used in the management of surgical intensive care patients [20]. This scoring system gives a detailed documentation of acute physiological disturbance and more precisely predicts mortality as well as morbidity. In the present study, worse APACHE II score was predictive of high mortality and morbidity. Therefore, APACHE II is the most important prognostic marker in the management of perforated peptic ulcer disease.

The diagnosis of suspected gatroduodenal perforation was made clinically and confirmed radiologically by erect abdominal X- ray in more than 85% of cases. Abdominal CT was more sensitive and specific than X- ray and was indicated in doubtful cases. History of peptic ulcer disease and NSAID usage was found in 18% of cases. In the era of H. pylori eradication therapy and acid reducing medication, up to 90% of perforations can be treated by simple closure with or without omental patch. Definitive ulcer surgery is no longer required in the majority of the patients, as recurrence rates have dropped dramatically with post-operative medical therapy [21, 22]. For gastric ulcer perforations, biopsy is indicated to rule out the malignant perforations [23, 24]. Formal gastric resection with reconstruction (Billroth I, II, Roux-en-Y) with or without vagotomy is rarely required and is used in less than 10% of cases [25, 26]. In patients with recent (<12 hours) perforation with history of chronic ulcer disease, prior failed medical therapy and giant perforation, a definitive ulcer operation may be indicated [27].

There is still an ongoing debate whether perforated peptic ulcer needs to be operated on or not. It has been estimated that about 40-80% of the perforations will seal spontaneously and overall morbidity and mortality are comparable [28, 29, 30]. But with pre-operative hypotension, treatment delay more than 24 hours and age more than 70 years of age, conservative treatment is associated with high failure rate [31]. Patients likely to respond well to conservative treatment can be selected by performing a gastroduodenogram [30]. Recent studies have demonstrated that laparoscopic repair of peptic ulcer perforation is feasible and as safe as conventional open surgery [32, 33, 34]. Boeys scoring system could accurately predict the risk of conversion. The conversion rate for patients with score 2 or more is more than 80% and laparoscopy is not beneficial [35].

In many series , the mortality rates vary from 6.5% to as high as 20% [7, 8, 20, 21].The present study showed a mortality rate of 24 [13.3%] out of 180 cases [table 3]. The most common cause was sepsis with multi-organ failure. Among the survivors, 51 patients had post-operative morbidities including wound infection, paralytic ileus, residual abscess, pneumonia, pleural effusion and wound dehiscence. Seven patients had post-operative wound dehiscence and subsequently required secondary suturing.

Figure 3

TABLE 3: CAUSES OF DEATH

Serial number	Cause of death	Number of patients
1	Acute myocardial infarction	03
2	Congestive heart failure	02
3	Respiratory infection and failure	06
4	Pulmonary embolism	01
5	Sepsis with multi organ failure	12

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